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(37 C.F.R. §§ 1.52(d), 1.55(a), 1.69)

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The document for which the attached English translation is being submitted is

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Specification

[Title of invention]

Method for generating a print data file, method for storing print data, a data storage medium therefor, a software product therefor, and an apparatus for generating an image data storage file

[Detailed description of the invention]

[0001]

[Technical field of the invention]

The present invention relates to a method for storing print data in a printer that prints print data stored in a printing apparatus (printer) in response to a specific print command, to a method for generating the print data file, to a data storage medium for recording a computer program for executing the method, to a computer program product composed of the executable commands of the recording method, and to a file generating device for creating the image data storage file used for storage.

[0002]

[Related art]

In addition to printing the purchased products, price, and other transaction information to sales receipts, modern POS terminals also commonly print a logo containing a store or company name on the receipt. Logos such as these printed by POS terminals typically contain both graphic elements and complementary text, and most logos therefore consist of image data.

[0003]

Image files are typically rather large, which means there would be a noticeable increase in the time required to print each receipt if the logo data is sent to the printer each time a receipt is printed. POS terminals in particular require fast printing, however, in order to register the purchased products and complete the sales transaction as quickly as possible. Frequently printed logo data is therefore commonly stored in non-volatile storage in the POS terminal printer so that when a particular print command is received, the POS terminal can simply read the desired logo from non-volatile storage to print the logo. This technique eliminates the need to send the logo data (particularly image data) from the host, thus reducing the load on the host, eliminating the corresponding data transmission time, and thereby significantly improving the effective print speed.

[0004]

Printers capable of printing two or three colors are now also used for POS printing. The ability to print multiple colors greatly increases the applications for which POS printers can be used beyond simply printing logos to include, for example, printing product advertisements, event announcements, and coupons. Color images are also significantly larger than black and white images, and processing color images accordingly requires much more time. The need to print color images on a POS printer therefore makes it even more important to store the image data in the printer. The present invention relates to storing this type of logo data in a printer.

[0005]

This specification uses "logo data," "logo information," and simply "logo" in reference to data that is stored in a printer and used to print information such as described above whether the data is image data or text data and whether the data is for monochrome or color printing. Furthermore, except in extremely rare cases, this logo data is usually mostly image data. The logo data stored in the printer may also be referred to as "image data" below for simplicity describing storing the logo data in a printer, but when the logo data is referred to as image data below the logo data includes the text data that may be used as the logo data in exceptional situations.

[0006]

[Problem to be solved by the invention]

As described above, the printing speed can be improved and the processing load on the host can be reduced by storing logo data in a non-volatile storage unit in the printer.

[0007]

However, after the logo is created various additional steps are needed in order to store the logo data to non-volatile storage in the printer. This is further described using a POS printer by way of example.

A POS printer is normally connected to the host device of the POS terminal at a checkout station in a store, for example.

This means that to store the logo data to the POS printer while the printer remains connected to the POS terminal, a logo storage program must be installed to the host device of the POS terminal. For example, the logo data (image information) must be created and saved as a file, the logo storage program installed on the host then reads this file and stores the logo data in the printer. These steps are also necessary when the logo data file is transmitted to the POS terminal.

[0008]

Installing such a logo storage program to each POS terminal is extremely difficult. It is alternatively possible to disconnect each POS printer from the POS terminal and connect each printer to a dedicated logo data writer in order to store the logo data to the printer, but this requires each printer to be disconnected and reconnected, which also complicates the logo data storage operation.

[0009]

The present invention is directed to solving these problems by providing a print data storage method for storing logo data or other print data (including text data) to a printer without requiring installing such a dedicated program on the host. A further object of the invention is to provide an apparatus for creating the image data storage file used to store the logo or print data in the printer.

[0010]

[Means for solving the problem]

The invention achieving the above objects is described below according to the principle of the invention.

[0011]

The print data storage method of the invention solves the above problems by creating an image data storage file containing the print data to be stored to the printer and a command data set for storing the print data to the printer, and using the host terminal to which the target printer is connected to read this image data storage file and send the command data set and the print data contained in the file to the target printer to store

the print data based on the command data set sent from the host.

[0012]

A method for creating an image data storage file according to a first aspect of this invention has (a) a step for creating print data; (b) a step for creating a command data set for storing the print data to non-volatile storage in the printer; (c) a step for creating an image data storage file containing both the print data and command data set; and (d) a file output step for outputting the image data storage file.

[0013]

The print data and commands for storing the print data in the printer are thus contained in a single image data storage file so that when the host device accesses this image data storage file and runs the embedded commands the image data is stored to the non-volatile storage unit of the printer without needing to install a program specifically for writing logo data to the printer in the host device.

[0014]

The image data storage file generating method according to another aspect of the invention is characterized by the command data set created in step (b) being a storage command data set that is executed by the target printer to store the print data in the non-volatile storage unit of the target printer. Because storage command set executed by the target printer is also embedded in the image data storage file, the print data can be stored in the printer by means of the host device simply reading the image data storage file and sending the storage command set and print data to the target printer.

[0015]

The image data storage file generating method according to another aspect of the invention is characterized by the command data set created in step (b) includes a storage command data set that is executed by the target printer to store the print data, and a data transmission command set for sending the storage command data set and print data to the printer from the host to which the printer is connected.

[0016]

In the image data storage file according to another aspect of the invention the data transmission command set in the command data set created in step (b) includes an executable command set enabling input of the target printer port number and other communication parameters from the host.

[0017]

By using an image data storage file created by the invention, the data transmission command set is embedded in the image data storage file. The storage command data set and print data can therefore be sent to the target printer by simply inputting the target printer communication parameters, and the print data can be easily stored.

[0018]

The image data storage file generating method according to another aspect of the invention is characterized by the data transmission command set in the command data set created in step (b) including an executable command set for sending the storage command data set and print data to the printer when the data storage file is opened.

Using the image data storage file according to this aspect of the invention makes inputting the communication parameters of the target printer unnecessary and enables easily storing the print data in the target printer by means of the host simply opening the image data storage file. The port number and other communication parameters of the target printer are set to the parameter values of the individual target printers when the data transmission command set is compiled.

[0019]

A print data storage method for storing print data in the non-volatile storage unit of a printer according to another aspect of the invention has (a) a step for creating print data; (b) a step for creating a command data set for storing the print data to the non-volatile storage unit in the printer; (c) a step for creating an image data storage file containing the print data and command data set; (d) a file output step for outputting the

image data storage file; and (e) a storage step whereby the host device to which the target printer is connected stores the print data to the target printer connected to the host device based on the command data set in the image data storage file. Print data can therefore be stored in a printer without installing a special installation program on the host.

[0020]

An image data storage file generating apparatus according to another aspect of the invention has an image editing means for creating print data; a command data set generating means for creating a command data set for storing the print data created by the image editing means to the printer; a file generating means for creating an image data storage file containing both the print data and the command data set generated by the command data set generating means; and an output means for outputting the image data storage file.

[0021]

[Embodiment of the invention]

A preferred embodiment of the present invention is described below with reference to the accompanying figures. It will be noted that the following embodiments are shown by way of description only and do not limit the scope of the invention. It will be obvious to one with ordinary skill in the related art that various alternative embodiments can be achieved by replacing some or all of the elements described below with an equivalent element, and that all such variations are included in the scope of this invention. Based on this premise, the preferred embodiments of the present invention are described below using by way of example storing logo information in a POS printer, the type of printer that most frequently prints such logos. It will be obvious, however, that the present invention also applies to any printer having the ability to store data for at least one logo in the printer and print the logo in response to a particular print command, including transaction receipt printers used in ATMs, parking lot ticket printers, and even customer number printers used to print queuing numbers in a store or bank.

[0022]

The primary use for POS printers has conventionally been to print transaction data, and POS printers have therefore typically been monochrome printers. More recent POS printers, however, are also capable of color printing. Color POS printers are not full-color printers, however, because of reasons relating to print speed and economy, and can only print using a few specific colors (such as two colors, red and black, for example).

Even if the printer can print only two colors, specifically red and black in this example, it is still possible to specify a number of gray levels (256 gradations, for example), and extremely subtle, complex colors can therefore still be printed by using dithering or other technique to express color density, and by variously combining red, black, and white (that is, the non-printing color of the print medium). Even more complex, subtle color printing is possible if the printer can print three or more colors. By being able to print in color, POS printers make the POS system an even more effective business tool.

[0023]

The primary purpose of the receipts printed by a POS printer is to provide the customer with an accurate record of a particular purchase, including details about the purchased products and the purchase price. When the transaction process is completed, the receipt is handed to the customer, who can then check the printed content to make sure there are no errors. Customers may also refer to the receipt after returning home in order to record the purchases in a home budget ledger. Receipts are thus individually handed to the customer and contain information that is important to the customer. Receipts are therefore fundamentally different from common flyers and advertisements, and are often kept by the customer as a record containing important information. As noted above, customers often check the content of the receipt after returning home in order to confirm transaction content. It therefore follows that by printing logos, pictures or photographs for advertisements, text messages and announcements, and other such information (referred

to below as advertising information) on the receipt, receipts can be expected to be particularly effective medium for advertising product promotions and conveying information.

[0024]

Because receipts are handed directly and individually to each customer, their ability to get the attention of and appeal to the customer is noticeably greater than normal print advertisements. Color image information in particular is an effective means of getting the customer's attention and attracts attention every time the customer checks the receipt. Printing advertising information on receipts is therefore particularly effective as an advertising and sales promotion means.

[0025]

POS systems having POS printers capable of printing image information such as described above are more than simply systems for processing sales transactions because they can also be used as a product advertising and sales promotion tool. Use of such POS systems in the sales and distribution industry is therefore expected grow significantly in the coming years. As logo printing is employed for a wider range of uses, however, the need to store or change the logo stored in the printer will also increase. It is therefore necessary to simplify the process used to store a logo in a printer.

[0026]

\* Logo printing

How a logo is typically stored in a printer and then printed is described next with reference to Fig. 7. Fig. 7 is a function block diagram of the host 50 and printer 10 of a POS terminal 40. The display, cash drawer, and other parts of the POS terminal 40 not related to logo printing are not shown in Fig. 7.

[0027]

The host 50 controls overall operation of the POS terminal 40, and controls the overall process for registering purchased products and completing the transaction. The host 50 can be any general purpose computer running POS software. The host 50 can therefore be configured using a CPU 51, ROM 52, RAM 53,

communications controller 54, input/output controller 56, and interfaces 55, 57. The host 50 is connected to the POS server (not shown in the figure) via an in-house LAN or other communication path, retrieves product prices and other information from the POS server via interface 55 and communications controller 54, and runs the product registration and transaction process. The content of the product registration and transaction process is displayed on the operator display and customer display (not shown in the figure) by way of the input/output controller 56 and interface 57, and is printed to the receipt and journal paper (not shown in the figure) by the printer 60.

[0028]

The printer 60 is connected by interface 61 to the host 50, and data sent from the host is received via interface 61 by the receiver 62. The received data is stored to receive buffer 63 in the order received, and in principle is interpreted in the order stored by the controller 64. If an executable command is detected as a result of data interpretation, the command is executed; if print data is detected, the data is converted to print data and stored to print buffer 65. Color printers have a separate print buffer (not shown in the figure) for each printable color, and store the print data for each printed color. When a print command is executed, the data stored to print buffer 65 is transferred to the print mechanism 66 for printing by the print head (not shown in the figure) of the print mechanism 66. When a line feed command is detected, a paper feed mechanism 67 is driven to transport the printing paper (not shown in the figure). The print mechanism 66 includes the paper feed mechanism 67 and print head, as well as a carriage drive mechanism (also not shown) in the case of a serial printer. Various kinds of print heads can be used in a POS printer, including thermal heads, inkjet heads (including both inkjet heads driven with a piezoelectric element and bubble printer heads driven with a heat element), and dot impact heads.

[0029]

When a logo storage command is received from the host 50, the logo data following the logo storage command is stored at a specified address in logo register 68, which is a non-volatile storage unit. The company or store logo, that is, information other than the product and transaction information printed to a receipt, is stored as the logo data. While the logo data stored in the logo register 68 was previously primarily a company or store trademark logo, for example, the logo data is now commonly image data used for product advertising or discount coupons, for example. As a result, the logo data stored in the logo register 68 is not limited to a store or company trademark, and may include image data for pictures or photographs used in advertisements, announcements, and coupons, for example. Color data may also be stored in the logo storage unit in order to print a color logo. "Logo," "logo data," and "logo information" are therefore used herein in reference to any such information that is also printed on a receipt. When a logo print command is received from the host 50, the logo data specified by the logo print command is transferred from the logo register 68 to the print buffer 65 and printed on the receipt. The print data transfer load of the host is therefore reduced and high speed printing is enabled.

[0030]

As shown in Fig. 8, the printer 60 can be configured using a CPU 70, which is a microprocessor; ROM 71, RAM 72, non-volatile storage 73, an interface 61, printing mechanism 66, and transportation mechanism 67 connected to the CPU 70 via a bus 34; and an operating system (OS) or other control program stored in ROM 71 and RAM 72. The receive buffer 63 and print buffer 65, for example, can be rendered using designated areas in RAM 72, and flash memory or other type of non-volatile storage 73 functions as the logo register 68. Furthermore, if SRAM is used for RAM 71, a designated area in RAM 71 can be used for the logo register 68.

[0031]

\* Overall concept of the process for storing logo data in the printer

The process for storing logo data to the printer is described next.

[0032]

The logo storage process of the prior art is described first with reference to Fig. 9. Fig. 9 schematically shows the prior art process from creating the logo to storing the logo in a printer.

[0033]

Before a logo can be stored in the printer, the logo to be stored must first be created and saved. This can be accomplished by creating a new logo to be stored, or by using pre-existing image data. To create a new logo, a general purpose image editing program 81 is used to capture an existing graphic or picture 80, combine the graphic 80 with text, for example, and thus create a new image file 82. A file storing an image recorded with a digital camera, a photograph or picture captured with a scanner, or other image can be used as the image file 82.

[0034]

To store logo data in the printer, a logo data storage program 83 sends a logo storage command (also referred to herein as a storage command data set) and the logo data to the printer (referred to below as the target printer) to which the logo data is to be stored. The target printer controller 64 (FIG. 7) interprets and executes the received storage command data set to store the received logo data (print data) to the logo register 68 (Fig. 7). A special logo data storage tool must be connected directly to the printer 50 in this case. In supermarkets or department stores where a large number of POS terminals are used, disconnecting the POS printer from each POS terminal and connecting it directly to the storage tool is extremely cumbersome.

[0035]

Another method is to install a logo data storage program on the host 60 so that the host reads the logo data as a file and saves the logo data in the printer by running a special logo data storage program. However, this method also requires installing

the storage program on each POS terminal.

[0036]

The method of the present invention for storing logo data to a printer is described next with reference to the example shown in Fig. 2. Fig. 2 schematically shows the overall process from creating the logo data to storing the logo in the printer using the method of this invention as described below.

[0037]

Before logo data can be stored to the printer it must first be created. This can be done by creating a new logo to be stored or by using an existing image file. To create a new logo, an existing picture, photograph, or other image data 80 is captured using a logo editing tool 2, and text is then added and other images are merged as appropriate to create the source logo data. The logo editing tool 2 is used to create a new logo according to the purpose of the printed logo. The logo information is typically created according to the particular printing purpose, such as printing coupons, printing a company or store logo, or printing product advertising. Creating a specific logo using the logo editing tool is a process of creating the text data, fetching the pictures, photographs or other graphic data, and then appropriately combining these elements to render the desired logo.

[0038]

If existing image data is used as is without further editing, a general purpose imaging tool 81 such as a digital camera or scanner can be used to save a photograph, picture, or other image data as image file 82 that is then used as the source logo data. If an existing image file 82 is thus used as is, it is not necessary to use the logo editing tool 3. Image data that is the basis for the logo data is referred to herein as the source logo data.

[0039]

An image data storage file compiler 4 then adjusts the source logo data colors and size to match the width of the printing paper used by the target printer to which the logo data

is stored, the print resolution, and the number of printable colors. The result of adjusting the colors (by a color reduction process, for example), size, and resolution of the source logo data is the logo data to be stored to in the target printer. As noted above, this logo data may be variously referred to herein as a logo, logo data, logo information, or print data.

[0040]

The invention then creates an image data storage file 5, that is, an image file with embedded commands including the command set for storing the logo data to the printer and the logo data itself. The host 60 is then caused to read this image data storage file 5 to store the logo data without needing to install a logo data storage tool in the host.

[0041]

\* Image data storage file compiler

Fig. 1 is a function block diagram showing the basic configuration of an image data storage file compiler 4 according to a preferred embodiment of the present invention.

[0042]

As shown in Fig. 2, the source logo data 3 or 82 used as the basis for the logo must first be created by means of the logo editing tool 2 or general purpose imaging tool 81. The logo editing tool 2 is more fully described further below and the image data storage file compiler 4 according to the present invention is described first below assuming that the source logo data file 3 or 82 has already been created.

[0043]

As shown in Fig. 1, the logo generator (also referred to as a print data generator) 10 of the image data storage file compiler 4 creates the logo data (print data) from the source logo data file 3 or 82, and stores the logo data to logo storage 11. The logo generator 10 executes the processes for reducing the colors of the source logo data to the printable colors of the target printer and adjusting the size of the logo to the width of the print medium and the resolution of the target printer. The image data resulting from this image processing operation is

stored to the logo storage 11 as the logo data.

[0044]

The image data storage file compiler 4 also has a command set generator 12. The command set generator 12 generates a set of commands for storing the logo data output by the logo generator 10 in the target printer. The command set generator 12 has a storage command set generator 14 and a data transmission command set generator 13. The storage command set is a set of executable commands that are sent to the printer 60 to store the logo data in the printer.

[0045]

The data transmission command set generator 13 has a parameter input command set generator 15 for generating an executable command set for receiving parameter input such as the communication port, a port detection command set generator 16 for generating an executable command set for detecting the port to which the target printer is connected, and a data transmission command set generator 17 for generating a data transmission command set for sending the storage command set and logo data to the target printer.

[0046]

The image data storage file generator 18 (simply the file generator 18 below) combines the logo data (print data), storage command set, and data transmission command set to generate the image data storage file 5 (Fig. 2). This image data storage file is preferably generated as a single file, but can be a set of multiple linked files. Whether a data transmission command is included, whether a parameter input command set is included, and whether a port detection command set is included in addition to the logo data and storage command set can be specified using a control unit not shown.

[0047]

The image data storage file output from the file generator 18 is then sent by the output means 19 over a communication path to the POS terminal or other host device to which the target printer is connected, or is written to floppy disk, a memory

card, or other storage medium (not shown). When the host 50 (Fig. 7) reads the executable commands embedded in the image data storage file as a result of reading the image data storage file sent by way of the communication path or recorded to floppy disk or other storage medium, the logo data can be stored in the target printer without installing a special program on the host 50.

[0048]

Similarly to the printer 60 described in Fig. 8, the image data storage file compiler 4 can be rendered using a microprocessor or other CPU, ROM and RAM connected to the CPU via a bus, and an operating system or other control program stored to the ROM and RAM. The CPU, ROM and RAM operate in conjunction with the control program stored to ROM and RAM, and thus function as the various means 10, 11, 12, 13, 18, 19 described above.

[0049]

The image data storage file compiling process is described below using flow charts. Fig. 3 is a flow chart showing the method of creating the image data storage file 5.

[0050]

First, the logo generator 10 generates the print data (logo data) (S110), and then confirms if generating the print data is finished (S120). If not (S120 returns no), the procedure waits for the print data to be completed (S110 and S120 repeat). When the logo data is completed (S120 returns yes), the command data set is created (S130), and the logo data and command data set are combined to create the image data storage file 5 (S140). The resulting image data storage file 5 is then transferred to the host 50 of the target printer using a data communication path or a floppy disk or other data storage medium (S150).

[0051]

Fig. 4 is a flow chart showing the command data set generating step (S130 in Fig. 3) in detail.

[0052]

When creating the print data is completed (S120 in Fig. 3 returns yes), the storage command set run by the target printer

60 to store the logo data in the printer is generated (S131). The data transmission command set is a set of commands run by the target printer 60 to store the logo data in non-volatile memory inside the printer.

[0053]

After the storage command data set is completed (S131), whether a data transmission command set is to be added to the command set is determined (S132). The system can be configured so that adding the data transmission command set is optional.

[0054]

If the transmission command is not added (S132 returns no), control advances directly to step S140. If the transmission command is added (S132 returns yes), the data transmission command set is generated (S133). As described above, the data transmission command set is a set of commands for sending the logo data and storage command set from the host 50 to the printer 60. This enables the host 50 to send the storage command set and logo data to the printer 60 automatically when the image data storage file is read or by simply specifying the port number and other specific parameters.

[0055]

Whether a port detection command set is to be included in the data transmission command set is then determined (S134). If the port detection command set is included (S134 returns yes), the port detection command set is created (S135). If it is not necessary to include the port detection command set (S134 returns no), a parameter input command set is created (S136).

[0056]

Fig. 5 is a flow chart showing the step S140 in Fig. 3 of compiling the image data storage file in detail.

[0057]

The image data storage file compiling step (S140 in Fig. 5) is executed after the command data set is completed (S130 in Fig. 3). The first step (S141) in this image data storage file compiling operation is to create a file 41 containing the logo data (print data) and the storage command set created in the

command data set generating routine (S131 in Fig. 4). Combining these two elements is indicated to the left of step S141 in Fig. 5. The logo data can be stored in the printer by sending this data containing the storage command set and logo data from host 50 to the target printer 60.

[0058]

Whether the data transmission command set was generated in the command data set generating routine (S130) is then confirmed (S142). If it was not (S142 returns no), the merged file 41 from step S141 is output as the image data storage file 5. If the data transmission command set was also generated (S142 returns yes), decision diamond S143 determines if the port detection command set is also present. If the port detection command set was also created, the port detection command set is combined with the data transmission command set. If the port detection command set was not created, the parameter input command set is incorporated (S146).

[0059]

A file 42 (Fig. 5) combining the appropriate data transmission command set with the file 41 generated in step S141 is then output as the image data storage file.

[0060]

If the port detection command set is incorporated in the data transmission command set in file 42, the port detection commands are run to automatically detect the port to which the target printer 60 is connected when the host 50 reads the image data storage file, and the storage command set and logo data are then sent automatically from the host.

[0061]

If the parameter input command set is included in the data transmission command set of the file 42, the parameter input commands are executed when the host 50 reads the image data storage file so that the port can be input from the host 50. Once the parameters are defined, the storage command set and logo data are transferred to the specified port and sent to the printer 60.

[0062]

\* Logo editing tool

The logo editing tool is described next with reference to Fig. 6. Fig. 6 is a function block diagram showing an example of a logo editing tool 2.

[0063]

The logo editing tool 2 is used to create the basic layout of an effective logo image optimized for the particular advertisement, announcement, or other printing objective. The logo editing tool 2 can create the logo by combining graphic images and text, and the resulting logo is stored as a logo file. A logo editing tool 2 in this example includes an image acquisition means 31, image data storage 32, image processor 33, text editor 34, merging means 35, and source logo data storage 36.

The image acquisition means 31 reads and stores image data or text data. The image data could be graphic data stored as an image file read from magnetic disk, CD-ROM, or other storage medium, or it could be captured from a digital camera, scanner, or other data input means. The graphic data could be a photographic image, graphic animation, geometric diagram, decorative text, or various shapes. The image data storage 32 can separately store plural images. The image acquisition means 31 is preferably compatible with various graphic and image file formats so that it can read as many different types of image files as possible.

[0064]

The image data stored in image data storage 32 is then processed by the image processor 33 to adjust the size and other image parameters as necessary. In addition to editing graphical image data, it is also possible to use a text editor 34 to create and edit text data. Designating specific colors for the text is also possible. The ability to create and edit text means that advertising slogans, announcements, and other textual information can also be included in the logo.

[0065]

The merging means 35 merges the captured image information,

image-processed image data, and/or text to create the desired logo. The merging means 35 combines plural image and text elements to create the desired source logo data. Factors that can be used to combine images and text include selecting the specific image and text elements, and specifying the size and position of each image and text element relative to the overall logo. The source logo data merged by the merging means 35 is preferably stored to the source logo data storage 36 in a metafile or similar format so that the various elements in the logo can be separated and re-edited as desired at a later time. It should be noted that while the image processor 33 and merging means 35 are shown as separate function blocks in Fig. 6, an image processing function could be provided in the merging means 35 for editing element size and other parameters appropriately during the data merging process.

[0066]

This example does not address applying a color reduction process to the source image data, but if the captured source image is a full color image, for example, the logo editing tool 2 can be configured to reduce the image to a specified number of colors so that the source logo data is stored using only a specified number of printable colors.

[0067]

[Effect of the invention]

The present invention creates an image data storage file containing both a command data set and the print data (logo data), sends this image data storage file via a communication path to a host 50 or causes the host 50 (Fig. 7) to read the image data storage file from a floppy disk or other data storage medium so that the host 50 reads and executes the command data set in the image data storage file to store logo data to a target printer without requiring installation of a special program in the host 50. It is therefore possible to cause the host to store logo data to a printer as a result of reading a file, and thereby flexibly addresses a wide range of logo printing needs.

## BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a function block diagram showing the basic configuration of an image data storage file compiler according to a preferred embodiment of the present invention.

Fig. 2 schematically illustrates the process according to the present invention for generating and storing a logo in a printer.

Fig. 3 is a flow chart showing the process for generating the image data storage file 5.

Fig. 4 is a flow chart showing in detail the subroutine (S130) for generating the command data set in Fig. 3.

Fig. 5 is a flow chart showing in detail the subroutine S140 for generating the image data storage file in Fig. 3.

Fig. 6 is a function block diagram showing an example of a logo editing tool 2.

Fig. 7 is a function block diagram of the printer 10 and host 50 of the POS terminal 40.

Fig. 8 is a block diagram showing the basic configuration of a printer 60 configured with a CPU, ROM, RAM, operating system, and other control software.

Fig. 9 schematically illustrates a conventional process for generating and storing a logo in a printer.

## KEY TO THE FIGURES

- 2 logo editing tool
- 4 image data storage file compiler
- 5 image data storage file
- 10 print data generating means printer
- 11 logo storage
- 12 command data set
- 13 data transmission command set
- 18 image data storage file generator
- 40 POS terminal
- 50 host
- 60 printer
- 63 receive buffer
- 68 logo register

[What is claimed is:]

[Claim 1] A method for creating an image data storage file for storing print data to a non-volatile storage unit in a printer, the method comprising:

- (a) a step for creating print data;
- (b) a step for creating a command data set for storing the print data to the non-volatile storage unit in the printer;
- (c) a step for creating an image data storage file containing both the print data and command data set; and
- (d) a file output step for outputting the image data storage file.

[Claim 2] The method for creating an image data storage file, wherein the command data set created in step (b) includes a storage command set which is executed by the printer for storing the print data in the non-volatile storage unit of the printer.

[Claim 3] The method for creating an image data storage file described in claim 2, wherein the command data set created in step (b) further includes a data transmission command set for sending the storage command data set and print data to the printer.

[Claim 4] The method for creating an image data storage file described in claim 3, wherein the data transmission command set created in step (b) further includes an executable command set for sending the storage command data set and print data to a specified port.

[Claim 5] The method for creating an image data storage file described in claim 3, wherein the data transmission command set created in step (b) contains an executable command set for detecting the port to which is connected the target printer to which the print data is to be stored, and sending the storage command set and print data to the detected port.

[Claim 6] The method for creating an image data storage file described in any of claims 1 to 5, wherein the (d) file output step comprises a step of sending the image data storage file via a communication path to the host device to which is connected the target printer to which the image data storage file is to be stored.

[Claim 7] The method for creating an image data storage file described in any of claims 1 to 5, wherein the (d) file output step comprises a step of writing the image data storage file to a readable/writable recording medium.

[Claim 8] The method for creating an image data storage file described in claim 7, wherein the readable/writable recording media include floppy disks, magneto-optical disks, CD-RW media, and memory cards.

[Claim 9] A print data storage method for storing print data to a non-volatile storage unit in a printer, the method comprising:

- (a) a step for creating print data;
- (b) a step for creating a command data set for storing the print data to the non-volatile storage unit in the printer;
- (c) a step for creating an image data storage file containing the print data and command data set;
- (d) a file output step for outputting the image data storage file; and
- (e) a storage step of the host device to which the target printer is connected storing the print data to the target printer connected to the host device based on the command data set in the image data storage file.

[Claim 10] The print data storage method described in claim 9, wherein:

the file output step (d) comprises a step of sending the image data storage file to the host device to which the printer is connected; and

the storage step (e) comprises a step of the host device that received the image data storage file storing the print data to the printer based on the command data set in the received image data storage file.

[Claim 11] The print data storage method described in claim 9, wherein:

the file output step (d) comprises a writing step for writing the image data storage file to a readable/writable recording medium; and

storage step (e) comprises a step of the host device reading the image data storage file written to the readable/writable recording medium in the writing step, and stores the print data to the printer based on the command data set in the read image data storage file.

[Claim 12] The print data storage method described in claim 11, wherein the readable/writable recording media includes floppy disks, magneto-optical disks, CD-RW media, and memory cards.

[Claim 13] The print data storage method described in any of claims 9 to 12, wherein:

the command data set created in step (b) includes a storage command set which is executed by the printer for storing the print data in the non-volatile storage unit of the printer; and

the storage step (e) comprises a step for sending the storage command data set and the print data to the printer by means of the host device, and storing the print data to the non-volatile storage unit of the printer by means of the printer executing the received storage command set.

[Claim 14] The print data storage method described in claim 13, wherein:

the command data set created in step (b) includes a data transmission command for sending the storage command data set and print data from the host device to the printer; and

the storage step (e) comprises a step for sending the storage command data set and print data to the printer by means of the host device based on the data transmission command set, and the printer executing the storage command data set to store the print data.

[Claim 15] The print data storage method described in claim 14, wherein:

the command data set created in step (b) includes an executable command set for enabling inputting parameters including the port and sending the storage command data set and print data to the port specified by the input parameters; and

the storage step (e) comprises a step for enabling inputting parameters including the port by means of the host device reading the image data storage file,

a step of transferring the storage command data set and print data to the port specified by the input parameters for output to the printer, and

a step of the printer executing the storage command data set and storing the print data in the non-volatile storage unit of the printer.

[Claim 16] The print data storage method described in claim 14, wherein:

the data transmission command set created in step (b) has an executable command set for detecting the port to which the target printer for storing the print data is connected when the image data storage file is opened, and automatically sending the storage command data set and print data to the printer at the detected port; and

the storage step (e) comprises a step in which when the host device opens the image data storage file the host device sends the storage command data set and the print data to the printer based on the data transmission command set, and the printer executes the storage command data set to store the print data.

[Claim 17]A computer-readable data storage medium for storing a computer program enabling executing the steps of a method for storing print data to a printer as described in any of claims 9 to 16.

[Claim 18]The data storage medium described in claim 17, wherein the data storage medium records the computer program to a Compact Disc, floppy disc, hard disk, or magnetic tape.

[Claim 19]A computer program product comprising an executable command set achieving the steps of a method for storing print data to a printer as described in any of claims 9 to 16.

[Claim 20]An image data storage file generating apparatus for creating an image data storage file for storing print data in a printer, comprising:

an image editing means for creating print data;

a command data set generating means for creating a command data set for storing the print data created by the image editing means to the printer;

a file generating means for creating an image data storage file containing both the print data and the command data set generated by the command data set generating means; and

an output means for outputting the image data storage file.

[Claim 21]The image data storage file generating apparatus described in claim 20, wherein:

the command data set generating means generates a storage command data set that is executed by the printer storing the print data as the command data set; and

the file generating means combines the storage command data set and the print data to create the image data storage file.

[Claim 22]The image data storage file generating apparatus described in claim 21, wherein:

the command data set generated by the command data set

generating means includes a storage command data set executed by the printer that stores the print data, and a data transmission command set for sending the storage command data set and print data to the printer from the host device to which the printer is connected; and

the file generating means combines the storage command set, data transmission command set, and the print data to create the image data storage file.

[Claim 23] The image data storage file generating apparatus described in claim 22, wherein:

the data transmission command set generated by the command data set generating means includes an executable command set enabling input of communication parameter data including the port number of the host device to which the printer is connected and other settings when the host device opens the image data storage file.

[Claim 24] The image data storage file generating apparatus described in claim 22, wherein:

the data transmission command set generated by the command data set generating means includes an executable command set automatically sending the storage command data set and print data to the printer when the host device to which the printer is connected opens the image data storage file.

[Document title]

Abstract

[Abstract]

[Problem]

To provide a method and apparatus for easily storing logo data in a printer.

[Means of solving the problem]

A file for storing a logo in a printer (an image data storage file) is created by a step for creating the print data, a step for generating a set of commands for storing the print data in the non-volatile storage unit of a printer, a step for compiling an image data storage file containing the print data and command data set, and a file output step for outputting the image data storage file. A host terminal is then caused to read this image data storage file and run the commands in the detected command data set to store the logo in the printer.

[Selected figure] Fig. 1

## TEXT IN THE FIGURES

## FIG. 1

SOURCE LOGO DATA FILE 3 OR 82  
LOGO (PRINT DATA) GENERATOR 10  
LOGO STORAGE 11  
STORAGE COMMAND SET GENERATOR 14  
PARAMETER INPUT COMMAND SET GENERATOR 15  
PORT DETECTION COMMAND SET GENERATOR 16  
DATA TRANSMISSION COMMAND SET GENERATOR 17  
FILE GENERATOR 18  
OUTPUT MEANS 19  
--> TO RECORDING DEVICE  
--> TO COMMUNICATION PATH

## FIG. 2

IMAGE DATA 80  
LOGO EDITING TOOL 2  
GENERAL PURPOSE IMAGING TOOL 81  
SOURCE LOGO DATA FILE 3  
IMAGE FILE 82 (bmp, gif, OTHER FORMAT)  
IMAGE DATA STORAGE FILE COMPILER 4  
IMAGE DATA STORAGE FILE 5  
POS TERMINAL HOST 50  
TARGET PRINTER 60

## FIG.

3

IMAGE DATA STORAGE FILE FORMAT  
S110 CREATE PRINT DATA  
S120 EDITING COMPLETE?  
S130 CREATE COMMAND DATA SET  
S140 CREATE IMAGE DATA STORAGE FILE  
S150 OUTPUT IMAGE DATA STORAGE FILE  
END

## FIG. 4

S130 CREATE COMMAND DATA SET

S131 CREATE STORAGE COMMAND SET  
S132 ADD DATA TRANSMISSION COMMAND SET?  
S133 CREATE DATA TRANSMISSION COMMAND SET  
S134 INCLUDE PORT DETECTION COMMAND SET?  
S135 CREATE PORT DETECTION COMMAND SET  
S136 CREATE PARAMETER INPUT COMMAND SET  
TO STEP S140

FIG. 5

S140 CREATE IMAGE DATA STORAGE FILE  
S141 ADD STORAGE COMMAND SET  
    ---> STORAGE COMMAND SET || LOGO DATA  
S142 DATA TRANSMISSION COMMAND SET DETECTED?  
S143 PORT DETECTION COMMAND SET DETECTED?  
S144 INCLUDE PORT DETECTION COMMAND SET  
S146 INCLUDE PARAMETER INPUT COMMAND SET  
S145 ADD DATA TRANSMISSION COMMAND SET  
    ---> DATA TRANSMISSION COMMAND SET | STORAGE COMMAND SET |  
LOGO DATA  
TO STEP S150

FIG. 6

IMAGE ACQUISITION MEANS 31  
DATA STORAGE 32  
IMAGE PROCESSOR 33  
TEXT EDITOR 34  
MERGING MEANS 35  
SOURCE LOGO DATA STORAGE 36

FIG. 7

HOST 50  
CPU 51  
ROM 52  
RAM 53  
COMMUNICATIONS CONTROLLER 54  
INTERFACE 55

INPUT/OUTPUT CONTROLLER 56  
INTERFACE 57  
DISPLAY DEVICES, CASH DRAWER, I/O DEVICES  
IN-HOUSE NETWORK (LAN)  
PRINTER 60  
RECEIVER 62  
RECEIVE BUFFER 63  
LOGO REGISTER 68  
PRINT MECHANISM 66  
PRINT BUFFER 65  
CONTROLLER 64  
INTERFACE 61  
TRANSMITTER 69  
PAPER FEED MECHANISM 67

## FIG. 8

HOST DEVICE 10  
INTERFACE 61  
ROM 71  
RAM 72  
NON-VOLATILE STORAGE 73  
PRINT MECHANISM 66  
PAPER FEED MECHANISM 67  
CPU 70

## FIG. 9

PICTURE, PHOTOGRAPH, OTHER IMAGE DATA 80  
GENERAL PURPOSE IMAGING TOOL 81  
IMAGE FILE 82 (bmp, gif, OTHER)  
LOGO DATA STORAGE PROGRAM 83  
--> INSTALL LOGO DATA STORAGE PROGRAM  
POS TERMINAL HOST 60  
PRINTER 50